

OBLICARINA, A NEW PERMIAN BIVALVE GENUS

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ABSTRACT

A new genus, *Oblicarina*, is erected for the bivalve *Chaenomya* ? *carinata* Etheridge, 1892, from middle Permian beds of Queensland. It is distinguished from *Chaenomya* Meek, 1865, and from allied Australian species placed in *Vacunella* Waterhouse by its pronounced posterior umbonal ridge and prosocline obliquity. The Lower Permian species *Mytilomorpha translata* Reed, 1932, from the Agglomeratic Slate of Kashmir, is referred to the same genus.

In 1892 Etheridge named and described *Chaenomya* ? *carinata* from middle Permian beds of Banana Creek, Dawson River, Queensland. The species is distinguished from *Chaenomya* Meek 1865 by its ornament of finer pustules, strong posterior umbonal ridge, smaller posterior gape, apparently smaller pallial sinus, and different protractor-retractor complex. It is closer to other Australian species that have been referred to *Chaenomya*, and are now placed in *Vacunella* Waterhouse 1965a, but is distinguished by its prosocline outline, the strength of its posterior umbonal ridge, and possibly by the anterior retractor and protractor complex and shallower pallial sinus. These criteria are considered to be of more than specific rank and to warrant the erection of a new genus.

An allied species is present in the Permian beds of Kashmir.

Genus ***Oblicarina*** nov.

TYPE SPECIES: *Chaenomya* ? *carinata* Etheridge 1892.

DIAGNOSIS: Highly prosocline moderately to well inflated shell, with incurved anterior umbones and pronounced posterior umbonal ridges. Posterior dorsal face flat or concave. Posterior dorsal gape narrow. Shallow sulcus on flank of shell. Ornament of wrinkles, low concentric costae, and fine pustules (5 to 8 per mm). Hinge short, edentulous, thickened. Anterior adductor subquadrate, placed at the anterior ventral extremity, adjoined by short protractor to a small rounded anterior retractor. Posterior muscle scars and pallial sinus not known for certain, but adductor possibly large, sinus possibly very shallow. By analogy with other species it is probable that the ligament is partly external and opisthodetic, supported by nymphs, partly internal.

DISCUSSION: The new genus is most closely allied to a group of Australian Permian bivalves which includes *Allorisma curvatum* Morris, 1845, *Pholadomya* (*Homomya*) *audax* Dana, 1847, *P.* (*Homomya*) *glendonensis* Dana, 1849, *Panopea* (*Mya*) *plicata acuta* Etheridge Sr., 1872, in part, pl. 21, fig. 3, not fig 3a (see Waterhouse, 1965b), *Sanguinolites etheridgei* de Koninck, 1877, *S. mitchelli* de Koninck, 1877, and *Chaenomya* ? *bowenensis* Etheridge Jr., 1892. *Allorisma curvatum* (see pl. 1, figs. 1, 4) was made the type of a new genus *Vacunella* by Waterhouse (1965a), and the remaining species are congeneric.

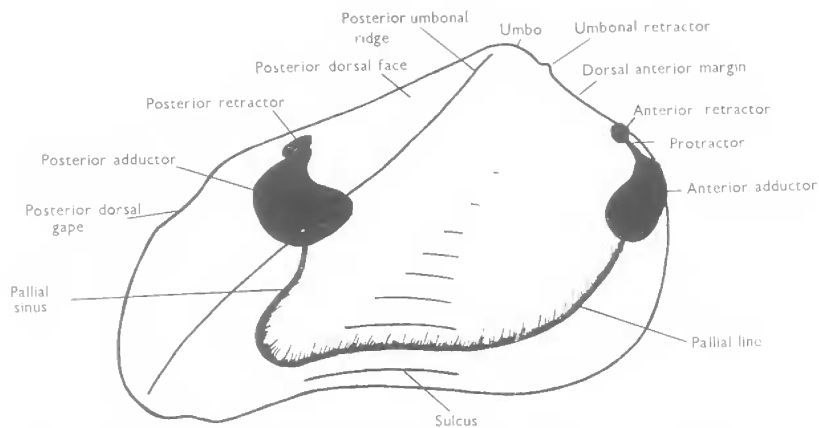


FIG. 1: Internal mould of generalised right valve of *Vacunella-Oblicarina* to show various morphological features. Based on Waterhouse (1965a, fig. 1, p. 369), with nomenclature of anterior musculature emended from Runnegar (1965).

The narrow posterior gape, ornament and edentulous hinge of these species are much the same as in the new genus. Some of the Australian species of *Vacunella* are moderately prosocline, and a few New Zealand allies have a weakly convex posterior umbonal ridge, but none are as oblique as *O. carinata* or have such a pronounced posterior umbonal ridge and flat or concave posterior dorsal face. The anterior retractor lies further from the adductor in *Vacunella*, and the protractor "isthmus" between the two is therefore longer (fig. 2a). Also the pallial sinus is possibly shallower in *O. carinata* (cf. fig. 2a with 2e), though this is not certain.

The type species of *Chaenomya*, *C. leavenworthensis* (Meck and Hayden, 1859), is less inflated than *O. carinata*, with parallel ventral and dorsal margins, and no posterior umbonal ridge. The posterior gape is huge, and the pustules coarse (2 or 3 per mm) and aligned radially. The anterior adductor scar lies close to the dorsal margin, and adjoins a rounded pedal scar, with no isthmus. The pallial sinus is high, but not very deep (fig. 2c).

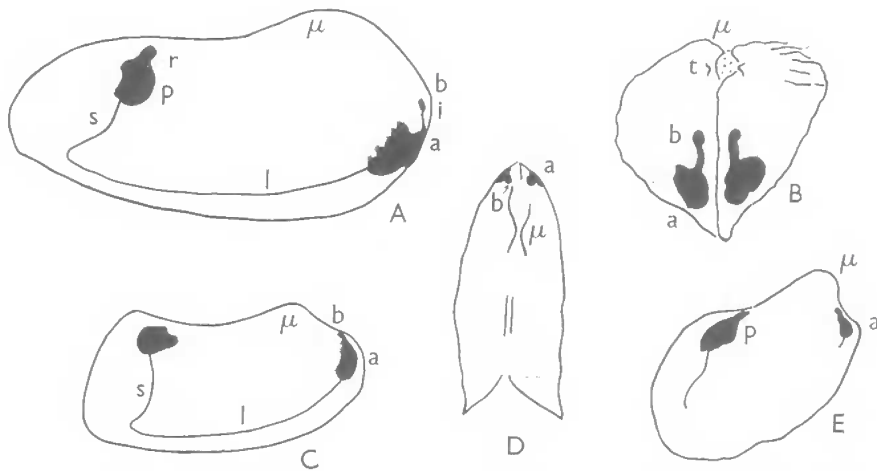


FIG. 2: Muscle scars in *Vacunella*, *Chaenomya* and *Oblicarina*. All specimens half natural size.

A,B, *Vacunella curvata* (Morris), lateral aspect of right valve, and anterior view based chiefly on F197, Australian Museum (from Maitland), with details added of the umbonal retractors from F30077, and posterior adductor and pallial sinus from specimens such as F8136, Australian Museum (from Wollongong).

C,D, *Chaenomya leavenworthensis* (Meek and Hayden), lateral aspect of right valve and dorsal aspect, sketched from photographs of the original type, USNM 1019a, Smithsonian Institution, with the posterior adductor rather suppositious, and the posterior retractor not clear on the photographs.

E, *Oblicarina carinata* (Etheridge), lateral aspect of right valve, pallial line and posterior adductor not certain.

a = anterior adductor;
 b = anterior retractor;
 i = "protractor isthmus between
 adductor and protractor;
 l = pallial line;

p = posterior adductor;
 r = posterior retractor;
 s = pallial sinus;
 t = umbonal retractor;
 μ = umbo.

TERMINOLOGY: The parts of the shell are named as in Waterhouse (1965a), except for the adoption of the suggestion of Runnegar (1965) that the moderately prominent rounded muscle scar behind the anterior adductor and well in front of the umbo be termed the anterior retractor, and that any scars between this and the adductor be referred to the protractors. In some species and genera there are no such scars, indicating that the protractors were possibly attached to the adductor muscle and not to the shell. Runnegar's proposals seem to be consistent with the muscle pattern outlined for the Palaeotaxodonts *Yoldia* and *Acila* by Heath (1937, pl. 10, fig. 1; pl. 5, fig. 39), though some species of *Nuculopsis* (fide Driscoll, 1964) have a pattern that suggests the arrangement shown in Waterhouse (1965a). According to Johnstone (1900, pl. 1, fig. 3; pl. 2, fig. 10) the anterior retractor of *Cardium* lies in front of or below the protractor.

Oblicarina carinata (Etheridge Jr.)

(Fig. 2E; pl. 1, figs. 2, 3.)

Chaenomya ? carinata Etheridge, 1892, p. 279, pl. 43, figs. 5, 6.

HOLOTYPE: F1218, Queensland Museum, Brisbane; the sole specimen figured and described by Etheridge (1892) from Banana Creek, from beds now assigned to the Flat Top Formation on information supplied by courtesy of Dr. J. F. Dear, Geological Survey of Queensland, to Mr. J. T. Woods.

DIMENSIONS (mm)

Length	Height	Width	Hinge length	Hinge thickening width	Distance of umbo from anterior margin	Width of gape
51	44.5	40.5	34	10.5	9.5	7

DESCRIPTION: Short, high, prosocline, well inflated, umbones anteriorly placed, incurved, orthogyrous, anterior ventral margin recessed, but not necessarily with a lunule as reported by Etheridge. Ventral margin well rounded in outline, diverging posteriorly from the hinge at 30° . Shallow sulcus lying on the flank of the shell below umbo, inclined posteriorly from hinge at 70° . Posterior umbonal ridge sinuous in outline, extending to posterior ventral extremity, inclined from hinge at 50° . Posterior dorsal face high and concave, with a low groove just inside the umbonal ridge on the left but not the right valve. Regular concentric wrinkles cover the first formed part of the shell, fading posteriorly on the posterior dorsal face, and feebly developed around the posterior ventral margin. Traces of fine costae (2 per mm) also present, and about 5 to 7 pustules per mm, not aligned radially or in any other well defined pattern. Anterior muscle scars as for genus. Posterior adductor possibly indicated by large rhomboid slightly raised area on the mould close to hinge, and suggestions of a possible pallial line on the left valve indicate a short very shallow pallial sinus (transposed onto the right valve in fig. 2e).

Oblicarina translata (Reed)*Mytilomorpha translata* Reed, 1932, p. 61, pl. 8, figs. 9, 9a, 10, 10a.

LECTOTYPE: The specimen figured by Reed (1932, pl. 8, fig. 10, 10a) is designated lectotype. F15552, Geological Survey of India, Calcutta.

DISCUSSION: This species from the Agglomeratic Slate of Kashmir is more elongated and less inflated than *O. carinata* but otherwise agrees in its prosocline outline, bluntly carinate posterior umbonal ridge, and narrow posterior gape. About 7 or 8 pustules per mm are visible on one of the specimens (Reed, 1932, pl. 8, fig. 9).

The hinge, well displayed on the lectotype, bulges slightly just below the umbo of each valve.

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